Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A magnetically modified electrode comprising an electrically conducting material having a catalytic material on at least a portion of at least one surface thereof, said catalytic material comprising: (i) at least one catalyst component comprising a metalloprotein that mediates a subatomic particle transfer process; (ii) at least one ion conducting material; and (iii) a plurality of magnetic and/or magnetizable particles,

wherein said magnetic particles have a magnetic field of sufficient strength to alter the rate of and/or distribution of products resulting from a chemical reaction involving said magnetic particles or occurring within the vicinity of said magnetic particles,

and further wherein said magnetizable particles have been or are exposed to a magnetic field of sufficient strength for a sufficient time to align the magnetic

moments of a portion of atoms at least some of said particles,

and further wherein said portion of atoms aligned within each of said magnetizable particles is sufficient to alter the rate of and/or distribution of products resulting from a chemical reaction involving said magnetizable particles or occurring within the vicinity of said magnetizable particles.

2. (Cancelled)

3. (Original) The electrode of claim 1, wherein said ion conducting material comprises a surfactant.

4. (Original) The electrode of claim 1, wherein said alignment is maintained upon removal of said magnetic field.

5. (Original) The electrode of claim 1, wherein each of said particles comprises a permanent magnetic material.

6. (Original) The electrode of claim 1, wherein each of said particles comprises a paramagnetic material.

7. (Original) The electrode of claim 1, wherein each of said particles comprises a superparamagnetic material.

8. (Original) The electrode of claim 1, wherein each of said particles comprises a ferromagnetic material.

9. (Original) The electrode of claim 1, wherein each of said particles comprises a ferrimagnetic material.

10. (Original) The electrode of claim 1, wherein each of said particles comprises a superconducting material.

11. (Original) The electrode of claim 1, wherein each of said particles comprises an anti-ferromagnetic material.

12. (Original) The electrode of claim 1, wherein said subatomic particle is selected from the group consisting of protons and electrons.

13. (Original) The electrode of claim 1, wherein each of said particles has a diameter of about 0.1 microns to about 50 microns.

14. (Original) The electrode of claim 1, wherein each of said particles comprises at least one element selected from the group consisting of samarium, neodymium, iron, boron, lithium, manganese, nickel, cobalt and zinc.

15. (Original) The electrode of claim 1, wherein each of said particles has at least one coating layer on at least a portion of the surface thereof.

16. (Original) The electrode of claim 15, wherein said coating layer comprises at least one inert material.

17. (Original) The electrode of claim 16, wherein said inert material comprises a silane or a silicon dioxide or a mixture thereof.

18. (Original) The electrode of claim 15, wherein said coating layer comprises at least one modifying material.

19. (Original) The electrode of claim 18, wherein said modifying material comprises at least one polymer.

20. (Original) The electrode of claim 19, wherein said polymer renders said particle chemically inert and/or mechanically stable.

21. (Currently Amended) The electrode of claim 18, wherein said modifying material affects at least one property of said particle selected from the group consisting of hydrophilicity, hydrophobicity, organophobicity, organophilicity, surface charge, dielectric constant, porosity, gas exclusion, gas permeability, deliquescence, wetting, density, electron conductivity and ionic conductivity.

22. (Original) The electrode of claim 18, wherein said modifying material is selected from the group consisting of homopolymers formed from the following monomers: styrene, styrene derivatives, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, iso-decyl methacrylate, methyl methacrylate, methyl acrylate, vinyl acetate, ethylene glycol, ethylene, 1,3-dienes, vinyl halides, and vinyl esters.

23. (Original) The electrode of claim 18, wherein said modifying material is selected from the group consisting of copolymers formed from at least one Monomer A and at least one Monomer B, wherein said Monomer A is selected from the group consisting of styrene, methyl acrylate, iso-decyl methacrylate, 2-hydroxyethyl acrylate, and 2-hydroxyethyl methacrylate and said Monomer B is selected from the group consisting of 4-styrenesulfonic acid and ethylene glycol dimethacrylate.

24. (Original) The electrode of claim 1, wherein each of said particles has a plurality of coating layers.

25. (Original) The electrode of claim 24, wherein at least one of said plurality of coating layers comprises an inert material.

26. (Original) The electrode of claim 1, wherein said magnetic particle comprises at least one material selected from the group consisting of samarium cobalt, neodynium-iron-boron, iron and iron oxide, cobalt, misch metal, and ceramic magnets comprising barium ferrite and/or strontium ferrite.

27. (Original) The electrode of claim 1, wherein said catalyst component is present in an amount between 0.1 and 0.8 mg/cm^2.

28. (Original) The electrode of claim 1, wherein said catalyst component is present in an amount of about 0.4 mg/cm^2.

29. (Original) The electrode of claim 1, wherein said particles are present in an amount between 0.1 and 0.8 mg/cm^2.

30. (Original) The electrode of claim 1, wherein said particles are present in an amount of about 0.4 mg/cm^2 exclusive of any coating(s).

31. (New) A magnetically modified electrode comprising an electrically conducting material having a catalytic material on at least a portion of at least one surface thereof, said catalytic material comprising: (i) at least one catalyst component that mediates a subatomic particle transfer process; (ii) at least one ion conducting material; and (iii) a plurality of magnetic and/or magnetizable particles,

wherein said magnetic particles have a magnetic field of sufficient strength to alter the rate of and/or distribution of products resulting from a chemical reaction involving said magnetic particles or occurring within the vicinity of said magnetic particles,

and further wherein said magnetizable particles comprise anti-ferromagnetic particles that have been or are exposed to a magnetic field of sufficient strength for a sufficient time to align the magnetic moments of a portion of atoms at least some of said particles,

and further wherein said portion of atoms aligned within each of said

magnetizable particles is sufficient to alter the rate of and/or distribution of products resulting from a chemical reaction involving said magnetizable particles or occurring within the vicinity of said magnetizable particles.

32. (New) The electrode of claim 31, wherein said at least one catalyst component comprises a metalloprotein.

33. (New) The electrode of claim 31, wherein said ion conducting material comprises a surfactant.

34. (New) The electrode of claim 31, wherein said alignment is maintained upon removal of said magnetic field.

35. (New) The electrode of claim 31, wherein said subatomic particle is selected from the group consisting of protons and electrons.

36. (New) The electrode of claim 31, wherein each of said particles has a

diameter of about 0.1 microns to about 50 microns.

37. (New) The electrode of claim 31, wherein each of said particles comprises at least one element selected from the group consisting of samarium, neodymium, iron, boron, lithium, manganese, nickel, cobalt and zinc.

38. (New) The electrode of claim 31, wherein each of said particles has at least one coating layer on at least a portion of the surface thereof.

39. (New) The electrode of claim 38, wherein said coating layer comprises at least one inert material.

40. (New) The electrode of claim 39, wherein said inert material comprises a silane or a silicon dioxide or a mixture thereof.

41. (New) The electrode of claim 36, wherein said coating layer comprises at least one modifying material.

42. (New) The electrode of claim 41, wherein said modifying material comprises at least one polymer.

43. (New) The electrode of claim 42, wherein said polymer renders said particle chemically inert and/or mechanically stable.

44. (New) The electrode of claim 41, wherein said modifying material affects at least one property of said particle selected from the group consisting of hydrophilicity, hydrophobicity, organophobicity, organophilicity, surface charge, dielectric constant, porosity, gas exclusion, gas permeability, deliquescence, wetting, density, electron conductivity and ionic conductivity

45. (New) The electrode of claim 41, wherein said modifying material is selected from the group consisting of homopolymers formed from the following monomers: styrene, styrene derivatives, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, iso-

decyl methacrylate, methyl methacrylate, methyl acrylate, vinyl acetate, ethylene glycol, ethylene, 1,3-dienes, vinyl halides, and vinyl esters.

46. (New) The electrode of claim 41, wherein said modifying material is selected from the group consisting of copolymers formed from at least one Monomer A and at least one Monomer B, wherein said Monomer A is selected from the group consisting of styrene, methyl acrylate, iso-decyl methacrylate, 2-hydroxyethyl acrylate, and 2-hydroxyethyl methacrylate and said Monomer B is selected from the group consisting of 4-styrenesulfonic acid and ethylene glycol dimethacrylate.

47. (New) The electrode of claim 31, wherein each of said particles has a plurality of coating layers.

48. (New) The electrode of claim 47, wherein at least one of said plurality of coating layers comprises an inert material.

49. (New) The electrode of claim 31, wherein said magnetic particle comprises at

least one material selected from the group consisting of samarium cobalt, neodynium-iron-boron, iron and iron oxide, cobalt, misch metal, and ceramic magnets comprising barium ferrite and/or strontium ferrite.

50. (New) The electrode of claim 31, wherein said catalyst component is present in an amount between 0.1 and 0.8 mg/cm^2.

51. (New) The electrode of claim 31, wherein said catalyst component is present in an amount of about 0.4 mg/cm^2.

52. (New) The electrode of claim 31, wherein said particles are present in an amount between 0.1 and 0.8 mg/cm^2.

53. (New) The electrode of claim 31, wherein said particles are present in an amount of about 0.4 mg/cm^2 exclusive of any coating(s).